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# Pulsed Biasing Techniques With Fully Ionized Metal Plasmas

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# Pulsed Biasing Techniques With Fully Ionized Metal Plasmas

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Metal Plasma Immersion Ion Implantation and Deposition (MePIIID) has been developed over the last decade as a hybrid ion implantation and thin-film deposition technique. Depending on the substrate bias voltage, MePIIID can also operate in a pure ion implantation or pure ion deposition mode. This paper is a brief review of the MePIIID technique and results obtained. The fully ionized metal or carbon plasma is conventionally produced by filtered vacuum arcs. Magnetic filters are used to remove unwanted macroparticles. Pulsing the substrate bias is advantageous for several reasons, and primarily a means of suppressing substrate arcing. Heat management and stress control are other important factors. Highly adherent films of a-C (diamond-like carbon), metals, oxides, nitrides, and carbides have been formed, and film quality can superior to films obtained by evaporation or sputtering.

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